

IN THE CLAIMS

Please amend the claims as follows:

1. (Previously Presented): A radio channel setting control method of controlling a radio channel used for communications between a base-station apparatus and a mobile-station apparatus in a mobile communications system employing a CDMA scheme including the base-station apparatus, mobile-station apparatus, and a radio network control apparatus controlling the base-station apparatus, comprising the steps of:

- a) determining whether or not a spread code used for the communications can be allocated;
- b) determining whether or not a predetermined hardware device can be allocated;
- c) determining whether or not a radio resource can be allocated; and
- d) setting the radio channel between the base-station apparatus and mobile-station apparatus when it is determined that the spread code, predetermined hardware device and radio resource can be allocated,

wherein said determining whether or not a spread code used for the communications can be allocated step includes accessing a spread code management table and determining that the spread code can be allocated when there is an unused channelization code.

2. (Previously Presented): The method as claimed 1, further comprising:  
measuring a first uplink interference, which is a total of interference directed to the base-station apparatus from the mobile-station apparatus; and  
determining that the radio resource can be allocated if the measured first uplink interference is equal to or smaller than a first threshold.

3. (Previously Presented): The method as claimed in claim 2, further comprising:

determining to allow allocation of a radio resource for an uplink circuit directed to the base-station apparatus from the mobile-station apparatus when the first uplink interference is equal to or smaller than the first threshold.

4. (Previously Presented): The method as claimed in claim 1, further comprising:  
measuring a first downlink transmission power, which is the total of transmission power directed to the mobile-station apparatus from the base-station apparatus; and  
determining to allow allocation of the radio resource if the thus-obtained first downlink transmission power is equal to or smaller than a second threshold.

5. (Previously Presented): The method as claimed in claim 4, further comprising:  
determining that a radio resource for a downlink circuit directed to the mobile station apparatus from the base-station can be allocated if the first downlink transmission power is equal to or smaller than the second threshold.

6. (Previously Presented): The method as claimed in claim 4, further comprising:  
determining allocation allowableness/disallowableness of the spread code used for the communications by the radio network control apparatus;  
measuring the first uplink interference and the first down-link transmission power by the base-station apparatus;  
determining, based on the measured first uplink interference and the first down-link transmission power, the allocation allowableness/disallowableness of the radio resource used for the communication;

determining the allocation allowableness/disallowableness of the predetermined hardware device in the base-station apparatus used for the communications by the base-station apparatus;

informing the radio network control apparatus of the determination results on the allocation allowableness/disallowableness of the radio resource and predetermined hardware device; and

setting the radio channel when each of all the determination results on the allocation allowableness/disallowableness for the above-mentioned spread code, predetermined hardware device, and radio resource is affirmative by the radio network control apparatus.

7. (Previously Presented): The method as claimed in claim 4, further comprising:

determining the allocation allowableness/disallowableness of the spread code used for the communications by the radio network control apparatus;

determining the allocation allowableness/disallowableness of the predetermined hardware device in the base-station apparatus used for the communications by the radio network control apparatus;

measuring the first uplink interference and the first downlink transmission power by the base station apparatus;

determining, based on the thus-obtained first uplink interference and first downlink transmission power, the allocation allowableness/disallowableness of the radio resource used for the communications by the base-station apparatus;

informing the determination result of the allocation allowableness/disallowableness of the radio resource the radio network control apparatus; and

setting the radio channel between the base-station apparatus and mobile-station apparatus if each of the determination results on the allocation

allowableness/disallowableness of the spread code, predetermined hardware device, and the radio resource is affirmative.

8. (Previously Presented): The method as claimed in claim 4, further comprising:

- determining the allocation allowableness/disallowableness of the predetermined hardware device in the base-station apparatus used for the communications by the base-station apparatus;
- measuring the first uplink interference and first downlink transmission power by the base-station apparatus;
- informing the determination result of the allocation allowableness/disallowableness of the predetermined hardware device, and the first uplink interference and first downlink which transmission power measured to the radio network control apparatus;
- determining allocation allowableness/disallowableness of the spread code used for the communications by the radio network control apparatus;
- determining, based on the first uplink interference and the first downlink transmission power informed of by the base-station apparatus, allocation allowableness/disallowableness of the radio resource used for the communications by the radio network control apparatus;
- and
- setting the radio channel between the base-station apparatus and mobile-station apparatus by the radio network control apparatus if each of all the determination results on the allocation allowableness/disallowableness for the spread code, predetermined hardware device, and the radio resource is affirmative.

9. (Previously Presented): The method as claimed in claim 4, further comprising:

determining allocation allowableness/disallowableness of the spread code used for the communications by the radio network control apparatus;

determining allocation allowableness/disallowableness of the predetermined hardware device in the base-station apparatus used for the communications by the radio network control apparatus;

measuring the first uplink interference and first downlink transmission power by the base-station apparatus;

informing the radio network control apparatus of the thus-obtained first uplink interference and first downlink transmission power;

determining, based on the thus-obtained first uplink interference power and first downlink transmission power, the allocation allowableness/disallowableness of the radio resource used for the communications by the network control apparatus; and

setting the radio channel between the base station apparatus and the mobile-station apparatus by the network control apparatus if each of the determination results on the allocation allowableness/disallowableness of the spread code, predetermined hardware device, and radio resource is affirmative.

10. (Previously Presented): The method as claimed in claim 1, further comprising:

deriving a second uplink interference directed to the base-station apparatus from the mobile-station apparatus newly occurring by the communications;

measuring the first uplink interference, which is the total of interference directed to the base-station apparatus from the mobile-station apparatus;

calculating a sum of the thus-obtained second uplink interference and first uplink interference; and

determining that allocation of the radio resource used for the communications is allowable if the sum of the first uplink interference and second uplink interference is equal to or smaller than a third threshold.

11. (Previously Presented): The method as claimed in claim 10, further comprising:  
determining to allow allocation of a radio resource for an uplink circuit directed to the base station apparatus from the mobile-station apparatus if the sum of the first uplink interference and the second uplink interference is equal to or smaller than the third threshold.

12 (Canceled).

13. (Previously Presented): The method as claimed in claim 10, further comprising:  
deriving the second uplink interference based on at least one of a chip rate, an information transmission rate of the communications, a signal to noise ratio corresponding to the chip rate or the information transmission rate of the communications, and the uplink interference.

14. (Previously Presented): The method as claimed in claim 1, further comprising:  
measuring a first downlink transmission power directed to the mobile-station apparatus from the base-station apparatus;  
deriving a second downlink transmission power directed to the mobile-station apparatus from the base-station apparatus; and  
determining to allow allocation of the radio resource used for the communications if the sum of the first down-link transmission power and second down-link transmission power

15. (Previously Presented): The method as claimed in claim 14, further comprising:  
allowing allocation of a radio resource for a down-link circuit directed to the mobile-station apparatus from the base station apparatus if the calculated sum of the second down-link transmission power and first downlink transmission power is equal to or smaller than the fourth threshold.

16. (Canceled)

17. (Previously Presented): The method as claimed in claim 14, further comprising:  
deriving the second downlink transmission power based on at least one of a quality on a pilot channel and reception power in the mobile-station apparatus.

18. (Previously Presented): The method as claimed 14, comprising:  
deriving the second downlink transmission power based on at least a ratio of a receiving energy per one chip on a pilot channel to an interference in the mobile-station apparatus, a spreading factor of a physical channel used for the communications, a signal to noise ratio, and a transmission power on the pilot channel in the base-station apparatus.

19. (Previously Presented): The method as claimed in claim 14, further comprising:  
determining allocation allowableness/disallowableness of the spread code used for the communications by the radio network control apparatus;  
deriving at least one of the second uplink interference and second downlink transmission power by the radio network control apparatus;

informing the base-station apparatus, of the derived the second uplink interference,  
and, of the second downlink transmission power;

measuring the first uplink interference and first downlink transmission power by the  
base-station apparatus;

if the derived second uplink interference is transmitted by the radio network control  
apparatus, calculating a sum of the first uplink interference and the second uplink interference  
by the base station,

if the derived second downlink transmission power is transmitted by the radio  
network control apparatus, calculating a sum of the first downlink transmission power and the  
second downlink transmission power by the base station apparatus;

if both the sum of the first uplink interference and second uplink interference and the  
sum of the first downlink transmission power and second downlink transmission power are  
calculated, determining allocation allowableness/disallowableness for the radio resource used  
for the communications based on the sum of the first uplink interference and second uplink  
interference and the sum of the first downlink transmission power and the second downlink  
transmission power;

if only the sum of the first uplink interference and second uplink interference power is  
calculated, determining allocation allowableness/disallowableness for the radio resource used  
for the communications is based on the sub of the first uplink interference and second uplink  
interference;

if only the sum of the first downlink transmission power and second downlink  
transmission power is calculated, determining allocation allowableness/disallowableness for  
the radio resource used for the communications is based on the sum of the first downlink  
transmission power and second downlink transmission power;



determining allocation allowableness/disallowableness for the predetermined hardware device in the base-station apparatus used for the communications;  
informing the radio network control apparatus of the thus-obtained determination results on the allocation allowableness/disallowableness for the radio resource and hardware device; and  
setting the radio channel between the base-station apparatus and mobile-station apparatus by the radio network control apparatus when each of all of the determination results on the allocation allowableness/disallowableness for the spread code, predetermined hardware device and radio resource is affirmative.

20. (Previously Presented): The method as claimed in claim 14, further comprising:  
determining allocation allowableness/disallowableness for the spread code used for the communications by the radio network control apparatus;  
determining allocation allowableness/disallowableness for the predetermined hardware device in the base-station apparatus used for the communications by the radio network control apparatus;  
deriving at least one of the second uplink interference and second downlink transmission power by the radio network control apparatus;  
if the second uplink interference is derived, informing the base station apparatus of the second uplink interference;  
if the second downlink transmission power is derived, informing the base-station apparatus of the second downlink transmission power;  
measuring the first uplink interference and first downlink transmission power by the base-station apparatus;

if the second uplink interference is transmitted by the radio network control apparatus,  
calculating a sum of the first uplink interference and the second uplink interference by the  
base-station apparatus,

if the second downlink transmission power is transmitted by the radio network control  
apparatus, calculating a sum of the first downlink transmission power and the second  
downlink transmission power by the base-station apparatus;

if both the sum of the first uplink interference and second uplink interference and the  
sum of the first downlink transmission power and second downlink transmission power are  
calculated, determining allocation allowableness/disallowableness for the radio resource used  
for the communications based on the sum of the first uplink interference and second uplink  
interference and the sum of the first downlink transmission power and second downlink  
transmission power;

if only the sum of the first uplink interference and second uplink interference is  
calculated, determining allocation allowableness/disallowableness for the radio resource used  
for the communications based on the sum of the first uplink interference and second uplink  
interference;

if only the sum of the first downlink transmission power and second downlink  
transmission power is calculated, determining allocation allowableness/disallowableness for  
the radio resource used for the communications based on the sum of the first downlink  
transmission power and second downlink transmission power;

informing the radio network control apparatus of the obtained determination result for  
the spread code and hardware resource; and

setting the radio channel between the base-station apparatus and mobile-station  
apparatus by the network control apparatus when each of all of the determination results on  
the allocation allowableness/disallowableness for the spread code, predetermined hardware

21. (Previously Presented): The method as claimed in claim 14, further comprising:  
determining allocation allowableness/disallowableness for the predetermined  
hardware device in the base-station apparatus used for the communications by the base-  
station apparatus;

measuring the first uplink interference and first downlink transmission power by the  
base-station apparatus;

informing the radio network control apparatus of the determination result on the  
allocation allowableness/disallowableness for the predetermined hardware device, and the  
measured first uplink interference and first downlink transmission power;

determining allocation allowableness/disallowableness for the spread code used for  
the communications by the network control apparatus;

deriving at least one of the second uplink interference and second downlink  
transmission power by the network control apparatus;

if the second uplink interference is derived, calculating a sum of the first uplink  
interference and the second uplink interference;

if the second downlink transmission power is derived, calculating a sum of the first  
downlink transmission power and the second downlink transmission power;

if both the sum of the first uplink interference and second uplink interference and the  
sum of the first downlink transmission power and second downlink transmission power are  
calculated, determining allocation allowableness/disallowableness for the radio resource used  
for the communications based on the sum of the first uplink interference and second uplink  
interference and the sum of the first downlink transmission power and second downlink  
transmission power;

if only the sum of the first uplink interference and second uplink interference is calculated, determining allocation allowableness/disallowableness for the radio resource used for the communications based on the sum of the first uplink interference and second uplink interference;

if only the sum of the first downlink transmission power and second downlink transmission power is calculated, determining allocation allowableness/disallowableness for the radio resource used for the communications based on the sum of the first downlink transmission power and second downlink transmission power;

setting the radio channel between the base-station apparatus and mobile-station apparatus by the network control apparatus when each of all of the determination results on the allocation allowableness/disallowableness for the spread code, predetermined hardware device and radio resource is affirmative.

22. (Previously Presented): The method as claimed in claim 14, further comprising:  
determining allocation allowableness/disallowableness for the spread code used for the communications by the radio network control apparatus;

determining allocation allowableness/disallowableness for the predetermined hardware device in the base-station apparatus used for the communications by the radio network control apparatus;-deriving at least one of the second uplink interference and second downlink transmission power by the radio network control apparatus;

measuring the first uplink interference and first downlink transmission power by the base station;

informing the radio network control apparatus of the measure first uplink interference and first downlink transmission power;

if the second uplink interference is derived, calculating a sum of the first uplink interference and the second uplink interference;

if the second downlink transmission power is derived, calculating a sum of the first downlink transmission power and the second downlink transmission power;

if both the sum of the first uplink interference and second uplink interference and the sum of the first downlink transmission power and second downlink transmission power are calculated, determining allocation allowableness/disallowableness for the radio resource used for the communications based on the sum of the first uplink interference and second uplink interference and the sum of the first downlink transmission power and the second downlink transmission power;

if only the sum of the first uplink interference and second uplink interference is calculated, determining allocation allowableness/disallowableness for the radio resource used for the communications based on the sum of the first uplink interference and second uplink interference;

if only the sum of the first downlink transmission power and second downlink transmission power is calculated, determining allocation allowableness/disallowableness for the radio resource used for the communications based on the sum of the first downlink transmission power and second downlink transmission power; and

setting the radio channel between the base-station apparatus and mobile-station apparatus by the radio network control apparatus when each of the determination results on the allocation allowableness/disallowableness for the spread code, predetermined hardware device and radio resource is affirmative.

23. (Currently Amended): A radio network control apparatus controlling communications between a subordinate base-station apparatus and a mobile-station apparatus in a mobile communications system employing a CDMA scheme, comprising:

a determination obtaining part configured to obtain a determination result as to whether or not a spread code used for the communications, a predetermined hardware device in the base-station apparatus and a radio resource can be allocated; and

a radio channel setting part configured to setup a radio channel between the base-station apparatus and the mobile-station apparatus when the spread code, predetermined hardware device and radio resource can be allocated,

wherein the determination obtaining part is configured to determine whether or not the spread code used for the communications can be allocated by accessing a spread code management table and ~~determining~~ determine that the spread code can be allocated when there is an unused channelization code.

24. (Previously Presented): The radio network control apparatus as claimed in claim 23, further comprising:

a spread code allocation allowableness/disallowableness determining part configured to determine allocation allowableness/disallowableness for the spread code.

25. (Previously Presented): The radio network control apparatus as claimed in claim 23, further comprising;

a spread code allocation allowableness/disallowableness determining result receiving part configured to receive a determination result on allocation allowableness/disallowableness for the spread code from the base-station apparatus.

26. (Previously Presented): The radio network control apparatus as claimed in claim 23, further comprising:

a hardware device allocation allowableness/disallowableness determining part configured to determine allocation allowableness/disallowableness for the predetermined hardware device.

27. (Previously Presented): The radio network control apparatus as claimed in claim 23, further comprising:

a hardware device allocation allowableness/disallowableness determining result receiving part configured to receive a determination result on allocation allowableness/disallowableness for the predetermined hardware device from the base-station apparatus.

28. (Previously Presented): The radio network control apparatus as claimed in claim 23, further comprising:

a radio resource allocation allowableness/disallowableness determining part configured to determine allocation allowableness/disallowableness for the radio resource.

29. (Previously Presented): The radio network control apparatus as claimed in claim 23, further comprising:

a radio resource allocation allowableness/disallowableness determining result receiving part configured to receive a determination result on allocation allowableness/disallowableness for the radio resource from the base-station apparatus.

30. (Previously Presented): The radio network control apparatus as claimed in claim 28, wherein:

the radio resource allocation allowableness/disallowableness determining part is configured to determine that allocation of the radio resource is possible when a first uplink interference which is the total of interference directed to the base-station apparatus from the mobile-station apparatus is equal to or smaller than a first threshold.

31. (Previously Presented): The radio network control apparatus as claimed in claim 30, wherein:

the radio resource allocation allowableness/disallowableness determining part is configured to determine that allocation of a radio resource for an uplink circuit directed to the base-station apparatus from the mobile-station apparatus is possible when the first uplink interference is equal to or smaller than of the first threshold.

32. (Previously Presented): The radio network control apparatus as claimed in claim 28, wherein:

the radio resource allocation allowableness/disallowableness determining part is configured to determine that the radio resource can be allocated when a first downlink transmission power, which is the total transmission power directed to the mobile-station apparatus from the base-station apparatus, is equal to or smaller than a second threshold.

33. (Previously Presented): The radio network control apparatus as claimed in claim 32, wherein: the radio resource allocation allowableness/disallowableness determining part is configured to determine that a radio resource for a downlink circuit directed to the mobile-station apparatus from base-station apparatus when the first downlink transmission power is



34. (Previously Presented): The radio network control apparatus as claimed in claim 28, wherein:

the radio resource allocation allowableness/disallowableness determining part is configured to determine that the radio resource can be allocated when a sum of a first uplink interference, which is a total of interference directed to the base-station apparatus from the mobile-station apparatus, and a second uplink interference directed to the base-station apparatus from the mobile-station apparatus newly occurring by the communications is equal to or smaller than a third threshold.

35. (Previously Presented): The radio network control apparatus as claimed in claim 34, wherein:

the radio resource allocation allowableness/disallowableness determining part is configured to determine that allocation of a radio resource for a uplink circuit directed to the base-station apparatus from the mobile-station apparatus is possible when the sum of the uplink interference and the second uplink interference is equal to or smaller than the third threshold.

36. (Currently Amended): The radio network control apparatus as claimed in claim 28, wherein:

the radio resource allocation allowableness/disallowableness determining part determining is configured to determine that allocation of the radio resource used for the communications is possible when a sum of a first downlink transmission power, which is a total of transmission power directed to the mobile-station apparatus from the base-station

apparatus, and a second downlink transmission power directed to the mobile-station

apparatus from the transmission power required for the communications is equal to or smaller than a fourth threshold.

37. (Previously Presented): The radio network control apparatus as claimed in claim 36, wherein:

the radio resource allocation allowableness/disallowableness determining part is configured to determine that allocation of a radio resource for a downlink circuit directed to the mobile-station apparatus from the base-station apparatus when the sum of the first downlink transmission power and second downlink transmission power is equal to or smaller than the fourth threshold.

38. (Currently Amended): A base-station apparatus performing communications with a mobile-station apparatus under control of a mobile network control apparatus in a mobile communications system employing a CDMA scheme, comprising:

an allocation allowableness/disallowableness determining part configured to determine whether allocation of at least any one a spread code used for the communications, a predetermined hardware device in the base-station apparatus and a radio resource is possible; and

a determination result transmitting part configured to transmit a determination result of the allocation allowableness/disallowableness determining part,

wherein allocation of a radio channel between the base-station apparatus and mobile-station apparatus is allowed when the spread code, predetermined hardware device and radio resource can be allocated, and

the allocation allowableness/disallowableness determining part is configured to determine whether or not the spread code used for the communications can be allocated by accessing a spread code management table and ~~determining to determine~~ that the spread code can be allocated when there is an unused channelization code.

39. (Currently Amended): A mobile communications system comprising a base-station apparatus, a mobile-station apparatus and a radio network control apparatus controlling the base-station apparatus, employing a CDMA scheme, wherein at least any of the base-station apparatus and radio network control apparatus comprises:

a spread code allocation allowableness/disallowableness determining part ~~determination~~ configured to determine whether or not a spread code used for the communications between the base-station apparatus and mobile-station apparatus can be allocated; a hardware device allocation allowableness/disallowableness determining part ~~determination~~ configured to determine whether or not a predetermined hardware device in the base-station apparatus used for the communications can be allocated; a radio resource allocation allowableness/disallowableness determining part ~~determination~~ configured to determine whether or not a radio resource used for the communications can be allocated; and a radio channel setting part ~~setting~~ configured to set a radio channel between the base-station apparatus and mobile-station apparatus when the spread code, predetermined hardware device and radio resource can be allocated,

the spread code allocation allowableness/disallowableness determining part is configured to determine whether or not the spread code used for the communications can be allocated by accessing a spread code management table and ~~determining to determine~~ that the spread code can be allocated when there is an unused channelization code.